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ON A COLLECTION OF FERNS FROM KAW TAO, SURAT.

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The following collection was made by Dr. A. F. G. Kerr on four separate occasions when visiting the island of Kaw Tao in the Gulf of Siam, off the north-east coast of Surat in the southern part of the Peninsula. His trips were made in December 1926–January 1927, April and July 1927, September 1928.

No new species were obtained, and, with the exception of *Adiantum suborbiculare* (Nos. 12760 and 16038), which has formerly only been noted from Sumatra, all the species recorded are well known and widely distributed.

The nomenclature used is that of Christensen in his *Index Filicum*, except in the genera *Dryopteris* and *Polypodium*. In dealing with these I have followed other authors, dividing the former into *Lastrea* and *Nephrodium*, and the latter into *Polypodium* and *Pleopeltis*.

The works quoted under each species are:—

van Alderwerelt van Rosenburgh, C. R. W. K. Handbook to the Ferns of the Malay Islands, Batavia, 1908; Supplement 1917; quoted as v. A. v. R., Mal. Ferns or Suppl.

Ridley, H. N. The Ferns of the Malay Peninsula. Journ. Malayan Branch R. Asiatic Society, Vol IV, Part 1, 1926, pp. 1-121; quoted as Ridley.

The distributions given are quoted from van Alderwerelt except where otherwise stated.

The numbers and remarks as to habitat, size of plant and so on, in inverted commas, are copied from the collector's labels.

Duplicates of these specimens with identical numbers have been given by the collector to the Kew Herbarium; the actual specimens referred to here will be placed in the Herbarium of the British Museum of Natural History at South Kensington.

My thanks are due to the authorities at the Kew Herbarium and at the British Museum for their unfailing courtesy in placing material and literature at my disposal, and in particular to Mr. Wright and Mr. Gepp for much valuable advice and assistance in difficult points of identification.

TRICHOMANES Linnaeus.

T. parvulum Poir.

v. A. v. R., Mal. Ferns, p. 68. Ridley, p. 16.

"c.300 m., on rock in evergreen forest", 13000, and, "c.200 m.", 13008.

Distr. Trop. and Temp, Asia, Australia, Polynesia, E. African Isles.

T. saxifragoides Pr.

v. A. v. R., Mal. Ferns, p. 88.

"c.300 m., on rock in evergreen forest", 16057, 16077.

Distr. Java, Philippine Islands (v. A. v. R.), also Melanesia, Fiji Is., Amsterdam (C. Chr., Ind. Fil.).

T. humile Forst.

v. A. v. R., Mal. Ferns, p. 94; Suppl., p. 103.

"c.300 m., on damp rock in evergreen forest", 16056.

Distr. Java, Formosa, Ternate, N. Guinea, Polynesia, Australia, N. Zealand, Malaya.

T. bipunctatum Poir.

v. A. v. R., Mal. Ferns, p. 95. Ridley, p. 17.

"c.300 m., on rock in evergreen forest", 13003.

Distr. Trop. Asia and Australia, Polynesia, Japan, W. and S. Africa.

HUMATA Cavanilles.

H. heterophylla (Sm.) Desv.

v. A. v. R., Mal. Ferns, p. 286. Ridley, p. 26.

"c.300 m., on rock in evergreen forest", 16041.

Distr. Malaya, Polynesia.

H. Gaimardiana (Gaud.) J. Sm.

v. A. v. R., Mal. Ferns, pp. 286, 824. Ridley, p. 27.

"c.200 m., on rock in evergreen forest", 16067, and, "c.300 m.", 16078.

Distr. Malaya, Burma, Polynesia.

DAVALLIA Smith.

D. solida (Forst.) Sw.

v. A. v. R., Mal. Ferns, p. 385; Suppl., p. 224. Ridley, p. 30.

"c.300 m., on rocks in open evergreen forest", 11196, and "near sea-level, on rocks near sea", 16010.

Distr. Malaya, Polynesia, Queensland.

MICROLEPIA Presl.

M. speluncae (L.) Moore.

v. A. v. R., Mal. Ferns, p. 310. Ridley, p. 31.

"c.50 m., common in dry evergreen forest", 11107.

Distr. Tropical and Subtropical.

SCHIZOLOMA Gaudichaud.

S. ensifolium J. Sm.

v. A. v. R., Mal. Ferns, p. 280. Ridley, p. 25.

"c.200 m., in evergreen forest", 16071.

Distr. Trop. Asia, Trop. Australia, Polynesia (v. A. v. R.), also S. and W. Africa (C. Chr., Ind. Fil.).

ADIANTUM Linnaeus.

A. caudatum L.

v. A. v. R., Mal. Ferns, p. 324. Ridley, p. 33.

"c.20 m., in evergreen forest," 11213.

Distr. Trop. Asia and Africa, New Hebrides.

A. suborbiculare v. A. v. R.

v. A. v. R., Mal. Ferns, p. 331; Suppl., p. 238.

"c.300 m., forming a carpet in low evergreen forest on top of rocky peak", 12760, and 16038.

Distr. Sumatra.

I have compared these specimens with a fragment named by

v. A. v. R., and kindly sent by Dr. Grethart from the Herbarium at Leiden to me at the British Museum.

PTERIS Linnaeus.

Pt. ensiformis Burm.

v. A. v. R., Mal. Ferns, p. 360. Ridley, p. 38.

“Under 10 m., in evergreen forest”, 11153.

Distr. Malaya, Trop. Australia, Polynesia, China, N. India.

Pt. pellucida Pr.

v. A. v. R., Mal. Ferns, p. 357; Suppl., p. 247.

“Under 10 m., terrestrial, by stream in evergreen forest,” 11235 and 13382.

Distr. Malaya, N. India, Java, Philippines.

ASPLENIUM Linnaeus.

A. nidus L.

v. A. v. R., Mal. Ferns, p. 439; Suppl., p. 282. Ridley, p. 42.

“Common on rocks, trees and in ground; evergreen forest,” 11232.

Distr. Paleotropical.

A. adiantoides (L.) C. Chr.

v. A. v. R., Mal. Ferns, p. 464; Suppl., p. 294.

“c.100 m., common on open rocks”, 11120.

Distr. Trop. Asia, Australia, Polynesia, New Zealand, E. Africa.

This species is very near the following, *A. macrophyllum* Sw., from which it can hardly be said to differ except in its smaller size.

A. macrophyllum Sw.

v. A. v. R., Mal. Ferns, p. 465. Ridley, p. 46.

“c.100 m., on rocks in evergreen forest”, 12794.

Distr. Malaya, Polynesia, Ceylon, S. India, Comores, Maccarenes.

A. laserpitifolium Lam.

v. A. v. R., Mal. Ferns, p. 472.

“c.300 m., growing on root mass of *A. nidus*”, 13004.

Distr. Malaya, Polynesia, Trop. Australia.

ASPIDIUM Swartz.

A. polymorphum Wall.

v. A. v. R., Mal. Ferns, p. 243. Ridley, p. 78.

"c.200 m., in evergreen forest", 12994.

Distr. Malaya, N. India, Burma, Ceylon.

NEPHRODIUM Schott.

N. urophyllum (Wall.) Keys.v. A. v. R., Mal. Ferns, p. 216 (under *Dryopteris*). Ridley, p. 72.

"c.300 m., in evergreen forest", 13005.

Distr. Malaya, N. India, S. China, Trop. Australia, Polynesia.**N. pteroides** (Retz.) J. Sm.v. A. v. R., Mal. Ferns, pp. 209, 818 (under *Dryopteris*). Ridley, p. 70.

"c.30 m., in evergreen glade", 11177, and "200 m., in evergreen forest", 16042.

Distr. Malaya, China, Burma, Queensland, Polynesia.**N. extensum** (Bl.) Moore.v. A. v. R., Mal. Ferns, p. 210, (under *Dryopteris*). Ridley, p. 70.

"c.300 m., in evergreen forest", 12996.

Distr. Malaya, Ceylon, S. India, Burma.

Nephrolium pteroides and *Nephrodiium extensum* are closely allied species. They can however be distinguished by the latter having more deeply cut pinnae with wider spaces between the lobes, more numerous glands on the under surface, and the sori being more deeply sunk, and often extending beyond the lobes, which they never do in *N. pteroides*.

LASTREA Presl.

L. syrmatica (Willd.) Moore.

v. A. v. R., Mal. Ferns, p. 193. Ridley, p. 67.

"Under 5 m., in evergreen forest", 12991.

Distr. Malaya, N. India.

NEPHROLEPIS Schott.

N. acutifolia (Desv.) Christ.

v. A. v. R., Mal. Ferns, p. 157. Ridley, p. 59.

"c.30 m., on rock in evergreen glade", 11176.

Distr. Malaya, Burma, Australia, Trop. Africa.

N. biserrata (Sw.) Schott.

v. A. v. R., Mal. Ferns, p. 162. *N. acuta* Presl., Ridley, p. 60.

"c.200 m., in glade in evergreen forest", 12764.

Distr. Pantropical.

ARTHROPTERIS J. Smith.

A. oblitterata (R. Br.) J. Sm.

v. A. v. R., Mal. Ferns, p. 155; Suppl., p. 133.

"c 300 m., climbing on rocks and trees in evergreen forest," 13002.

Distr. Paleotropical.

I have not seen a specimen of *A. glabra* Copel. from the Philippines, which is said to differ in having its surfaces naked, indusia persistent rather than fugacious and in keeping green when dry. The hairiness of *A. oblitterata* is a slight and variable character, and judging from specimens in the Kew Herbarium the indusia are persistent on all but very old sori. Dr. Kerr's specimen has a few hairs on the upper surfaces of the main veins and well marked indusia and it remains green when dry, but as I doubt the validity of Copeland's species I keep the older name.

PLEOPELTIS Humboldt and Bonpland.

Pl. phymatodes (L.) Moore.

v. A. v. R., Mal. Ferns, p. 664 (under *Polypodium*); Suppl., p. 399 (under *Pleopeltis*). Ridley, p. 95.

"In sandy ground by beach", 11161, and "In sandy ground, evergreen forest near sea", 13378.

Distr. Trop. and Subtrop. Asia, Africa, Australia and Polynesia.

DRYNARIA J. Smith.

D. quercifolia (L.) J. Sm.

v. A. v. R., Mal. Ferns, p. 698. Ridley, p. 100.

"c.20 m., very common on rocks", 11140.

Distr. Trop. Asia and Australia, S. China, Fiji.

CYCLOPHORUS Desvaux.

C. *ad nascens* (Sw.) Desv.

v. A. v. R., Mal. Ferns, p. 681. Ridley, p. 97

"c.50 m., common epiphyte", 11116.

Distr. Trop. Asia, Polynesia.C. *acrostichoides* (Forst.) Pr.

v. A. v. R., Mal. Ferns, p. 685; Suppl., p. 412. Ridley, p. 98.

"c.100m., on tree in evergreen forest", 16027.

Distr. Ceylon, Malaya, Polynesia, Queensland.

ANTROPHYUM Kaulfuss.

A. *reticulatum* (Forst.) Klff.

v. A. v. R., Mal. Ferns, p. 535; Suppl., p. 327; Corrections, p. 57, Ridley, p. 104.

"c.200 m., on rocks in evergreen forest", 13007.

Distr. Malaya, Polynesia, Trop. Australia, N. India, Madagascar.

The difference between this and *A. callifolium* Bl., according to descriptions, lies in the reticulation or otherwise of the sori; but whether the sori, arranged in both along the reticulated veins, actually join or not, seems to vary with the degree of fertility of the individual frond, and therefore, in my opinion, the reticulation or otherwise of the sori should not be admitted as a distinguishing character.

VITTARIA J. Smith.

V. *elongata* Sw.

v. A. v. R., Mal. Ferns, p. 556. Ridley, p. 108.

"c.20 m., on trees and rocks in dry evergreen forest; usually on root-mass of *Asplenium nidus*", 11142.*Distr.* Trop. Asia and Polynesia, New South Wales.V. *lineata* (L.) Sm.

v. A. v. R., Mal. Ferns, p. 561; Suppl., p. 338. Ridley, p. 108.

"c.200m., on rock in evergreen forest", 16040.

Distr. Florida, Amer. Trop. (C. Chr., Ind. Fil.), Trop. Asia, Japan, Trop. and S. Africa, America from Florida to S. Brasil (v. A. v. R.).

TAENITIS Willdenow.

Taenitis blechnoides Sw. *

Ridley, p. 109.

"c.200m., in evergreen forest", 16043.

Distr. N. India, Ceylon, Malaya, Polynesia.

DRYMOGLOSSUM Presl.

D. heterophyllum (L.) C. Chr.

v. A. v. R., Mal. Ferns, p. 703.

"c.50 m., on tree by stream in evergreen forest", 11209.

Distr. Trop. Asia.

STENOCHLAENA J. Smith.

S. palustris (Burm.) Bedd.

v. A. v. R., Mal. Ferns, p. 720. Ridley, p. 111.

"Climbing on trees in tidal swamp", 11228.

Distr. Trop. Asia, Australia, Polynesia.

SCHIZAEA Smith.

S. dichotoma (L) Sm.

v. A. v. R., Mal. Ferns, pp. 116,803. Ridley, p. 120.

"c. 200 m., in evergreen forest", 16069.

Distr. Trop. Asia, Australia and Polynesia, Madagascar, Mascarene Is.

LYGODIUM Swartz.

L. salicifolium Pr.

v. A. v. R., Mal. Ferns, p. 113.

"Under 10 m., climbing in evergreen forest", 11229.

Distr. Trop. Asia.*L. polystachyum* Wall.

v. A. v. R., Mal. Ferns, p. 113. Ridley, p. 120.

"c.30 m., climbing in evergreen forest", 11182.

Distr. Malacca, Tenasserim (v. A. v. R.), Burma, Annam, Malay Peninsula (Ridley).

* I am responsible for the addition to the list of this species, probably inadvertently omitted in the collection sent to Dr. Eryl Smith. *A. Kerr.*

ANGIOPTERIS Hoffmann.

A. crassipes Wall.

v. A. v. R., Mal. Ferns, Appendix, p. 839; Suppl., p. 445.

"c. 300 m., fronds c. 1 m. long; evergreen forest", 13006.

Distr. North India, Burma, South China, New Guinea.

I have referred this specimen to *A. crassipes* Wall. as it agrees fairly well with the type specimen in the Kew Herbarium, but the group of species split off from *A. evecta* by De Vries in his monograph* seems to me to need very careful revision, and I doubt whether many of the species can be kept as distinct.

HELMINTHOSTACHYS Kaulfuss.

H. zeylanica (L.) Hk.

v. A. v. R., Mal. Ferns, p. 777. Ridley, p. 121.

"Under 5m., collected by Put", 16047.

Distr. Trop. Asia and Australia, N. Caledonia.

* Monograph des Marattiacees. Leide. Fol. 8, Tab., 1853.

